

## REMARKS

### Amendments

Claims 1, 13, 28 and 30 have been amended. Claims 1-9, 11-24 and 26-31 are currently pending in the present application.

Claims 1, 28 and 30 have been amended to specify that the  $\beta$  (1-3)  $\beta$  (1-4) glucan has a particle size of *equal to* or less than 0.2  $\mu\text{m}$ . A similar amendment has been made to claim 13. Claim 13 has also been amended to specify that the step of removing particulate material comprises filtering out material having a particle size of greater than about 0.2  $\mu\text{m}$  from said extract by filtration with a cutoff of 0.2  $\mu\text{m}$ . Support for these amendments is provided at page 19, lines 5-9 of the description. It is clear that the use of microfiltration with a cutoff of 0.2  $\mu\text{m}$  in the presently disclosed methods would inherently produce a filtrate comprising  $\beta$  (1-3)  $\beta$  (1-4) glucan having a particle size of equal to or less than less than 0.2  $\mu\text{m}$ .

### Rejection Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-3, 8-9, 11-24 and 26-31 under 35 U.S.C. § 103(a) as being unpatentable over Westerlund *et al.* (*Carbohydrate Polymers* **20**:115-123, 1993) or Bhatti (US 5,518,710) in view of Potter *et al.* (US 6,323,338). Applicants traverse this rejection.

Westerlund *et al.* discloses a method that involves dialysis of a beta-glucan containing fraction using a dialysis tubing having a 12 kDa molecular weight cut-off to produce a purified liquid extract containing mixed-linked beta-glucans. See, page 116, right column, lines 47-53.

Bhatti discloses a method that includes removal of degraded starches from a beta-glucan extract using centrifugation, dialysis or filtration. See, column 3, lines 63-65.

Potter *et al.* teaches a step of concentrating an intermediate solution from which insoluble material and flocculate have been previously removed by means of centrifugation, dialysis, filtration, or passage through a mesh or cloth. See, column 5, lines 19-65. The step of concentrating is conducted using ultrafiltration with a membrane having a cutoff size of 0.2  $\mu\text{m}$  to collect a *retentate* comprising  $\beta$  (1-3)  $\beta$  (1-4) glucans having particle sizes of *greater than* 0.2  $\mu\text{m}$ . See, column 6, lines 26-32 and FIG. 2. Potter *et al.*, therefore, teaches separate steps for

(i) removing insoluble material and particulate material from a beta-glucan extract to produce an intermediate solution, and (ii) concentrating the intermediate solution.

Neither Westerlund *et al.*, Bhatti nor Potter *et al.* teach or suggest using a single step for both (i) removing insoluble material and particulate material from a beta-glucan extract and (ii) fractionating the beta-glucan extract to produce a filtrate comprising beta-glucan having a particle size of equal to or less than 0.2  $\mu\text{m}$ . Furthermore, as the ultrafiltration step of Potter *et al.* is used for *concentrating* a beta-glucan solution and not for removing insoluble material and particulate material, there would be no reason for one of skill in the art to substitute the ultrafiltration device disclosed in Potter *et al.* for the means for removing insoluble material and particulate material disclosed in Bhatti, or the dialysis tubing disclosed in Westerlund *et al.* to produce a filtrate comprising beta-glucan having a particle size of equal to or less than 0.2  $\mu\text{m}$ .

In view of the above amendments and remarks, Applicant submits that the claimed subject matter is not obvious from the combination of Westerlund *et al.* or Bhatti and Potter *et al.* Withdrawal of this rejection is requested.

## Conclusion

In view of the above amendments and remarks, Applicants believe that the present claims satisfy the provisions of the patent statutes and are patentable over the cited prior art. Reconsideration of the application and early notice of allowance are requested. The Examiner is invited to telephone the undersigned to expedite the prosecution of the application.

Respectfully submitted,  
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